

Contents

About the Editors and Authors.....xvii

Preface.....xxiii

PART 1. INTRODUCTION

- 1 The Development of Sociobiology: A Biologist's Perspective--*George W. Barlow*.....3
 - Biological Roots 3
 - Evolutionary Genetics*,4; *Ecology*,8; *Ethology*,10
 - Sociobiology and the Social Sciences 11
 - Epigenesis 12
 - Relevance of Animal Behavior 14
 - Adaptiveness*,15; *Posing Questions*,16; *Inaccessible Questions*,16; *Resistance to Comparisons*,16; *Ideas and Their Implementation*,17
 - Scope of This Book 18
 - Summary 18
 - Acknowledgements 19
 - Literature Cited 19

- 2 Sociobiology, the New Synthesis? An Anthropologist's Perspective--*James Silverberg*.....25
 - Anthropology: A Science of Human Adaptation 25
 - A Discipline That Is Both Biological and Cultural*,26; *Language, Linguistics*

and Anthropology, 27; *How Anthropologists Study Human Behavior*, 28; *"Primateology"*, 32; *The Continuity of Life vs. Human Uniqueness*, 33; *Synthesis Through a Focus on Human Adaptation*, 33

Sociobiology: Neither Sin-Thesis Nor the Great Beyond 35

Reductionism: The Synthesis of Teeth and Tasty Morsel, 36; *"Beyond Nature/Nurture" ≠ Beyond Inherited vs. Learned*, 38

Some Fallacies and Cautions in the Study of Human Behavioral Data 41

Don't Attribute What Is Learned to the Genes for a Learning Capacity, 41; *Some Cautions in Using Adaptation and Selection as Explanatory Concepts*, 44; *Downplaying Behavioral Diversity in General*, 50; *Downplaying Human Behavioral Diversity*, 53; *Infering Biological Significance from Culture Trait Distributions*, 57; *The Early Pleistocene Behavioral Fixation*, 59; *Interpreting by Labelling*, 60

Conclusions 62

Summary 63

Acknowledgements 66

Literature Cited 66

PART 2. VIEWED FROM AFAR

3 Sociobiology: Another New Synthesis--
David L. Hull77

The Sociology of Science 79

The Essence of Sociobiology 84

Conclusion 90

Summary 91

Acknowledgements 93

Literature Cited 93

4 A Critical Examination of Current Sociobiological Theory: Adequacy and Implications--
Arthur L. Caplan97

Values and Sociobiology 97

Determinism 98

Nature/Nurture 100

Evolutionary Theory and Socio- biology	100
Methodological Difficulties	101
<i>Causation, 101; Comparison, 104;</i> <i>Adaptation, 108</i>	
Ethics, Politics and Values	111
Summary	113
Literature Cited	113

PART 3. THE ORGANISM IN ITS ENVIRONMENT

5 Ecological Determinism and Sociobiology-- <i>Stephen T. Emlen.....</i>	125
---	-----

Basic Principles of Ecological Sociobiology	129
<i>To Be or Not to Be Social, 129;</i> <i>Costs and Benefits of Territori-</i> <i>ality, 131; Ecological Determinants</i> <i>of Mating Systems, 135</i>	
Relevance to Human Sociobiology	137
Summary	143
Acknowledgements	144
Literature Cited	144

6 The Coevolution of Behavioral and Life- History Characteristics-- <i>Robert R. Warner.....</i>	151
---	-----

The Nature of Adaptations	153
Environmental Parameters	155
Primary Adaptations	159
<i>Primary Adaptations in Life History,</i> <i>159; Primary Adaptations in Social/ Mating Systems, 163</i>	
Secondary Adaptations	167
<i>Secondary Adaptations in Life</i> <i>History, 167; Secondary Adaptations</i> <i>in Social and Mating Systems, 170</i>	
Discussion	172
<i>Phylogenetic Constraints, 172; Short-</i> <i>Term Adaptive Responses, 174; Testing</i> <i>Hypotheses, 174</i>	
Summary	177
Acknowledgements	179
Literature Cited	180

7 Foraging, Social Dispersion and Mating Systems-- <i>Jack W. Bradbury.....</i>	189
--	-----

Introduction	189
--------------	-----

Emballonurid Bats	191
Greater Spear-Nosed Bats	196
Epomophorine Bats and Lek Behaviors	199
Closing Comments	203
Summary	203
Acknowledgements	204
Literature Cited	204
8 Predictive Sociobiology: Mate Selection in Damsel-fishes and Brood Defense in White-Crowned Sparrows-- <i>David P. Barash</i>	209
Two Predictions and Their Tests	213
<i>Mate Selection Among Damsel-fishes, 213; Brood Defense Among White-Crowned Sparrows, 219</i>	
Summary	224
Acknowledgements	224
Literature Cited	225
9 Tradition and the Social Transmission of Behavior in Animals-- <i>Dani-lo Mainardi</i>	227
Nongenetic Transmission of Information Can Be Conservative or Innovative	230
Situations and Behaviors Linked to Social Transmission	236
Evolutionary Aspects of Social Transmission	241
Summary	244
Acknowledgements	245
Literature Cited	245
10 Sociobiology and the Theory of Natural Selection-- <i>Stephen Jay Gould</i>	257
Natural Selection as Story-telling	257
Sociobiological Stories	259
Special Problems for Human Sociobiology	262
<i>Limited Evidence and Political Clout, 262; Adaptation in Humans Need Not Be Genetic and Darwinian, 264</i>	
Failure of the Research Program for Human Sociobiology	264

Summary	267
Literature Cited	268

PART 4. GENES AND THE GAMES THEY PLAY

11	Genetics of Animal and Human Behavior-- <i>John C. DeFries</i>	273
	Introduction	273
	Open-Field Behavior	273
	Social Dominance	281
	Specific Cognitive Abilities	287
	Conclusion	289
	Summary	290
	Acknowledgements	291
	Literature Cited	291
12	A Consideration of the Genetic Foundation of Human Social Behavior-- <i>Edward O. Wilson</i> ...	295
	Summary	303
	Literature Cited	304
13	Cultural Causes of Genetic Change-- <i>Frank B. Livingstone</i>	307
	Models of Evolutionary Change	308
	Genetic and Behavioral Variation	309
	Drinking Habits and Genetic Change	313
	Cultural Adaptation and Genetic Change	315
	Cultural and Genetic Causes of the Incest Taboo	316
	Ongoing Genetic Evolution and Its Cultural Causes	319
	The Problem of Population Control and Its Cultural Causes	322
	Summary	325
	Literature Cited	325
14	Good Strategy or Evolutionarily Stable Strategy?-- <i>Richard Dawkins</i>	331
	Genes and Strategies	331
	Good, Bad and Stable	332
	Fishers and Pirates--A Hypo- thetical Example	333

Diggers and Enterers--A Real Example	334
An ESS Is Not Necessarily Optimal, but It Is Uncheatable	335
Dying Gasp Retaliation	336
The Strategy Set	337
Discrete Strategies or Continuum?	338
The Cowpat War	340
A Mixed Strategy Can Be Mixed Within an Individual or Can Be a Polymorphism	341
Frequency-Dependent Behavior	343
Conditional Versus Mixed Strategies	343
Making the Best of a Bad Job	344
One Generation's Conditional Strategy as the Previous Generation's Mixed Strategy	346
Sons Versus Daughters as Parental Strategy	347
Broad Applicability of the ESS Concept	348
Cooperative ESSs	352
The Individual Phenotype as a Genetic Strategy	353
Developmentally Stable Strategy and Culturally Stable Strategy	354
Is Anything Not an ESS?	356
Summary	358
Acknowledgements	361
Literature Cited	361

PART 5. SEX AND REPRODUCTIVE STRATEGIES

15 Kin Selection and the Paradox of Sexuality--George C. Williams	371
History of the Concept of a Cost of Sexuality	372
Meiosis as a Problem for Kin Selection and Outbreeding	372
Recent Models of the Cost of Meiosis	375
Isogamy and Anisogamy	377
Paternal Investment	380

	The Paradox of Sexuality	381
	Summary	382
	Acknowledgements	383
	Literature Cited	383
16	Genes, Hormones, Sex and Gender-- <i>Elizabeth Kocher Adkins</i>	385
	Sex Differences and Psycho- sexual Differentiation in Nonhuman Mammals	385
	Sex Differences and Psycho- sexual Differentiation in Humans	387
	<i>Sex Differences in Human Behavior,</i> 387; <i>Psychosexual Differentiation</i> <i>in Humans: Gender Identity in Cases</i> <i>with Incongruous Sex or Absent Gonads,</i> 390; <i>Psychosexual Differentiation in</i> <i>Humans: Subjects with Abnormal Pre-</i> <i>natal Hormone Exposure Compared</i> <i>with Controls,</i> 393	
	Comparison of Human and Nonhuman Data	399
	Homosexuality	401
	Conclusions	403
	Summary	406
	Acknowledgements	407
	Literature Cited	407
17	Is Yomut Social Behavior Adaptive?-- <i>William Irons</i>	417
	Some Alternative Working Hypotheses: Group Versus Individual Selection	418
	The Data	423
	The Population Under Study	424
	The Group-Selection Hypothesis	424
	The Individual-Selection Hypothesis	436
	The Null Hypothesis	456
	Conclusion	457
	Summary	457
	Acknowledgements	459
	Literature Cited	459

18	Social Behavior, Biology and the Double Standard-- <i>Eleanor Leacock</i>	465
	Evolutionary Levels and Sociobiological Theory	465
	Sociobiological Conjectures and Ethnographic Data	469
	<i>Social Behavior in Egalitarian Societies, 472; Male Dominance and the Double Standard, 476</i>	
	Sociobiology and Social Considerations	479
	Summary	483
	Acknowledgements	484
	Literature Cited	484
19	Nineteenth-Century Evolutionary Theory and Male Scientific Bias-- <i>Stephanie A. Shields</i>	489
	Assumptions Regarding Gender Differences	490
	The Traits of Women	493
	<i>Gentility, 494; Perceptiveness, 495; Emotional Lability, 495</i>	
	Values and Science	496
	Implications for Sociobiology	498
	Summary	499
	Literature Cited	500
PART 6. NEPOTISM AND CONFLICT		
20	The Limits of Ground Squirrel Nepotism-- <i>Paul W. Sherman</i>	505
	Introduction	505
	Study Animal and Techniques	507
	Sexual Dimorphism in Dispersal	509
	Nepotism Does Not Occur Among Males	511
	Nepotism Among Females	512
	<i>Alarm Calls and Nest Burrow Defense are Nepotistic, 512; Close Relatives Seldom Fight When Establishing Nest Burrows, 513; Close Relatives are Permitted Access to Defended Areas, 515; Close Relatives Codefend Areas, 519; Close Relatives Cooperate Directly to Defend Their Young, 519; Close</i>	

	<i>Relatives Warm Each Other When Predatory Mammals Approach, 521</i>	
	Mechanism by Which Close Relatives Are Favored	524
	Recognition "Errors" and the Ontogeny of Recognition	526
	The Limits of Nepotism	529
	Summary	535
	Acknowledgements	536
	Literature Cited	537
21	Kin-Selection Theory, Kinship, Marriage and Fitness Among the Yanomamö Indians-- <i>Napoleon A. Chagnon</i>	545
	Introduction	545
	Favoring Kin	549
	Differences in Reproductive Success	551
	Possible Adaptiveness of Yanomamö Marriages	558
	Fitness and Cross-Cousin Marriage in One Descent Group	560
	Summary	568
	Acknowledgements	569
	Literature Cited	569
22	Kin Selection, Fitness and Cultural Evolution-- <i>B. J. Williams</i>	573
	Kin Selection	573
	Group Selection and Cultural Evolution	580
	Summary	584
	Acknowledgements	585
	Literature Cited	585
23	Parent-Offspring Conflict-- <i>Judy A. Stamps and Robert A. Metcalf</i>	589
	Theoretical Models of Parent-Offspring Conflict	590
	<i>Parent-Offspring Conflict and Reproductive Success, 590; Conditions for the Spread of Selfish Alleles, 593; Coefficient of Relationship and Parent-Offspring Conflict, 598</i>	

Empirical Tests of Parent-Offspring Conflict	600
<i>Does Conflict Exist in Nature?</i>	600;
<i>Control of Egg Laying in Social Hymenoptera</i> ,	601;
<i>Control Over Sex Ratios in Social Hymenoptera</i> ,	603;
<i>Brood Reduction in Birds</i> ,	605
Parent-Offspring Conflict Versus Altruism	611
Summary	613
Literature Cited	614
Index.....	619